

Chalcogen and Halogen Bonding for Anion Recognition and Catalysis Dr Mark Greenhalgh

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Abstract

Chalcogen and halogen bonding are attractive non-covalent interactions between Lewis acidic Group 16 (S, Se, Te) or Group 17 (Br, I) containing molecules and a Lewis base. Although the strength of these interactions can rival or surpass those of hydrogen bonding, growing interest lies in understanding how chalcogen, halogen, and hydrogen bonding differ, and how these distinctions can be exploited experimentally.

This talk will examine the synthesis and application of chalcogen- and halogen bond donors, with a focus on how structural modification can modulate the strength and directionality of these interactions. Experimentally determined chalcogen and halogen bonding strengths will be benchmarked against hydrogen bonding to highlight the synthetic advantages offered by these less conventional interactions. Complementary computational analysis will be discussed to further clarify the relative strengths and underlying origins of these bonding phenomena.